

ORD CLEARANCE FORM

Initiator Information		Product Category (Select if applicable)	
First Name:	Danelle	<input type="checkbox"/> HISA (Highly Influential Scientific Assessment) <input type="checkbox"/> ISI (Influential Scientific Information) <input type="checkbox"/> High Profile and/or Policy Relevant (not HISA or ISI)	
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Principal Investigator / Project Officer Information		Product Information	
First Name:	Danelle	Clearance Tracking Number	ORD-002009
Middle Initial:		EPA Publication Number	
Last Name:	Lobdell	Product Type	Journal Article
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Product Title			
Characterization of Air Manganese Exposure Estimates for Residents in Two Ohio Towns			
Author(s), Affiliation, and Address			
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Percentage Contribution %:			
Impact / Purpose Statement			
Note: The Impact / Purpose Statement information for this work product will be displayed on the additional pages.			
Product Description / Abstract			
Note: All Product Description / Abstract information for this work product will be displayed on the additional pages.			
Tracking and Planning			
Note: All Tracking and Planning Field data for this work product will be displayed on the additional pages.			
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<input type="checkbox"/> EPA Only <input checked="" type="checkbox"/> Public	<input type="checkbox"/> Yes (Permission Attached) <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Applicable
Quality Assurance	Policy Implications
Is a form indicating QA approval for this product attached?	This product enunciates new policy or affects existing policy:
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Yes (Memo Attached) <input checked="" type="checkbox"/> No
QAPP Reference	
A TSA was conducted 11/5-6/2011 by Mike Ray; QARF and NEPA were reviewed and approved in 2009	
Keywords	
1. exposure estimate	4. particulate
2. manganese	5. EPHD-12-109
3. air modeling	6.
Comments	
Note: All Comments for this work product will be displayed on the additional pages.	
Digital Signatures (As applicable)	
Technical Information Manager: Janetx Williams	Date Approved: 09/10/2012
Level 1 Approver: Tim Wade	Date Approved: 09/11/2012
Level 2 Approver: Wayne Cascio	Date Approved: 09/25/2012
Level 3 Approver:	Date Approved:
Level 4 Approver:	Date Approved:
Level 5 Approver:	Date Approved:
Level 6 Approver:	Date Approved:
Level 7 Approver:	Date Approved:

Additional Submission Digital Signatures (As applicable)	
Technical Information Manager:	Date Approved:
Level 1 Approver:	Date Approved:
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Level 7 Approver:	Date Approved:

Product Title

No additional Product Title

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Tracking and Planning 2012 Sets

Task: 2.2.1.6 Lessons learned, best practices and stakeholder feedback from community and tribal participative case studies

Product: N/A - Not Applicable

Project: 2.2.1: Enhancing Community Public Health

Science Question: N/A - Not Applicable

Topic: Improving Human Health and Well-being for Community Sustainability

Theme: Forecasting and Assessing Ecological and Community Health

Research Program Area: Sustainable and Healthy Communities

QAPP Reference

No additional QAPP Reference

Impact / Purpose Statement

Two Ohio communities were identified with elevated measured concentrations of ambient air-Mn, one of which has the highest concentrations of measured air-Mn reported to the United States Environmental Protection Agency (U.S.EPA) Air Quality System (AQS) database (U.S.EPA, 2012a). Air-Mn in one community (Marietta) is predominantly released from a large ferro-alloy smelting plant (Eramet, Inc.) while in the other community (East Liverpool) it is released during the offloading, grinding (for resizing), packaging, and storage of Mn-containing ore products at a metals storage and packaging facility (S.H. Bell Company). The objective of this study was to estimate inhalation exposures to outdoor air-Mn for residents of two Ohio communities with different emission and source concentration profiles. This modeling will then be used as part of a community health study that was conducted in both communities.

Product Description / Abstract

Background: Few available studies evaluate long-term health outcomes from inhalational manganese (Mn) exposure in residential populations, due in part to challenges in measuring individual study subject exposures.
Objectives: The objectives of this study were to derive receptor-specific air manganese (air-Mn) inhalation exposures for two Ohio communities with very different emission and source concentration profiles.
Methods: U.S. EPA's AERMOD dispersion model and air measurement data were used to estimate concentrations for resident-specific receptor sites in two study communities. Detailed emissions data from a Mn smelting operation were used for modeling air-Mn in the first community. Since no emissions data were available in the second community near a Mn-ore processing and storage facility, AERMOD was used to calculate a ratio of estimated Mn exposures at receptor sites. The model was then calibrated using measured data from local air quality monitoring stations.
Results: Estimated annual mean outdoor air-Mn exposures for residents were as high as 1.93 µg/m³ in total suspended particles (TSP). Exposure estimates were consistent with the range of measured air-Mn in the communities where air modeling was conducted.
Conclusions: Data from local air monitoring stations can provide the means to calibrate models used in estimating long-term exposure to Mn. Furthermore, this combination of modeling and ambient air sampling can be used to derive these estimates even in the absence of source emission data.

Comments

Author: Danelle Lobdell Date: 09/10/2012 8:06 AM
No comments were entered.

Author: Janetx Williams Date: 09/10/2012 2:59 PM
No comments were entered.

Author: Tim Wade Date: 09/11/2012 5:09 PM
No comments were entered.

Author: Wayne Cascio Date: 09/25/2012 3:40 PM
No comments were entered.